

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

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| JAMES BURKE and | : |
| VICTORIA BURKE, | : |
| | : |
| Plaintiffs, | :CIVIL ACTION NO. 03:06-CV-2090 |
| | : |
| v. | : |
| | : |
| TRANSAM TRUCKING, INC. and | : |
| GREGORY WIRFEL, | :(JUDGE CONABOY) |
| | : |
| Defendants, | : |
| | : |
| v. | : |
| | : |
| RINEHIMER BUS LINES, INC. and | : |
| NICK PAOLELLO | : |

MEMORANDUM

Here the Court considers "Defendants' Motion in Limine, or Alternatively, Request for a *Daubert* Hearing to Preclude the Testimony of Mariusz Ziejewski" (Doc. 119). Defendants argue Dr. Ziejewski's opinions exceed the scope of his expertise, lack a reliable factual foundation, and lack scientific reliability. Because of this, Defendants move to preclude him from offering into evidence any testimony, reports or opinions at trial.

This matter was fully briefed by the parties' and the Court heard testimony and additional argument at a *Daubert* hearing on May 19, 2009, where the parties examined Dr. Ziejewski and made additional argument. This matter is therefore ripe for disposition. For the reasons discussed below, this motion is denied.

I. BACKGROUND

A. Factual Background

This case arises from a vehicle accident involving the commercial tractor trailer driven by Gregory Wirfel ("Defendant Wirfel") and the 2000 Ford Ranger pickup truck driven by James Burke ("Plaintiffs").¹ At all times relative to this accident, Defendant Wirfel was employed by TransAm Trucking, Inc. ("Defendant TransAm"). Plaintiffs allege Defendant Wirfel and Defendant TransAm (collectively referred to as "Defendants") are liable to them for damages resulting from the accident.

Plaintiffs obtained the services of Dr. Ziejewski, a biomechanic, in order to determine if the forces exerted on Plaintiff in this accident were sufficient to cause injuries. (Doc. 119-3). Dr. Ziejewski reviewed the following materials prior to forming the opinions and conclusions expressed in the report: (1) police report; (2) complaint; (3) witness statement of Jeff Jennings; (4) witness statement of Richard Henry; (5) PA EMS report; (6) medical records from Geisinger Medical Center; (7) medical records of Dr. Terrence Duffy; (8) medical records of Dr. Mark Raczewicz; (9) medical records of Valley Open MRI; (10) deposition of Nick Paoletto; (13) IME report of Dr. John Della

¹Although only Mr. Burke was involved in the underlying accident, this suit is brought on behalf of James and Victoria Burke (husband and wife). Thus, we will refer to Mr. and Mrs. Burke as "Plaintiffs" in this Order.

Rosa; (14) deposition and exhibits of Officer Thomas Szoke; and (15) photographs. (*Id.*)

Dr. Ziejewski also obtained the vehicle parameters for a 2000 Ford Ranger (Plaintiff's vehicle) and a 2005 Freightliner (Defendants' Tractor Trailer); obtained and measured an exemplar 2000 Ford Ranger; performed laboratory compression testing; performed vehicle dynamics analysis; utilized Armstrong Laboratory/Wright-Patterson Air Force Base (AL/WPAFB) computer program to analyze this data; determined the geometric and mass properties of Plaintiff's body segments and joint locations and range of motion characteristics using the Generator of Body Data (GEBOD) AL/WPAFB computer program and performed dynamic analysis for the collision using this program. (*Id.*)

After conducting his analysis and testing, and reviewing numerous articles and studies, Dr. Ziejewski came to the following conclusions "within a reasonable degree of biomechanical engineering certainty:"

- (1) the forces on James Burke's head resulting from the collision on April 10, 2006 were sufficient to cause a brain injury;
- (2) the forces on James Burke's cervical region resulting from the collision on April 10, 2006 were sufficient to cause a cervical region injury;
- (3) the results from the biomechanical analysis of the collision on April 10, 2006 involving James Burke are consistent with the medical opinions and findings indicating a brain injury; and
- (4) the results from the biomechanical analysis of

the collision on April 10, 2006 involving James Burke are consistent with the medical opinions and findings indicating a cervical region injury.

(*Id.*)

B. Procedural Background

On February 27, 2009, Defendants filed the present motion in limine (Doc. 119), with supportive brief (Doc. 120), seeking to preclude Dr. Ziejewski's testimony on the grounds that Dr. Ziejewski is not qualified to give a medical opinion and on the grounds that his methodology was improper. Plaintiffs' response (Doc. 159) and opposition brief (Doc. 160) were filed on March 13, 2009. Defendants filed their reply brief (Doc. 193) on March 26, 2009. By Order on April 2, 2009, the Court scheduled a *Daubert* hearing, which was held on May 19, 2009.

II. DISCUSSION

Here Defendants move to preclude Dr. Ziejewski from offering into evidence any testimony, reports or opinions at trial because his opinions exceed the scope of his expertise, lack a reliable factual foundation, and lack scientific reliability. (Doc. 119).

The admissibility of "expert" testimony is a question of law governed by Rule 702 of the Federal Rules of Evidence and the United States Supreme Court's Decision in *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579 (1993). Rule 702 provides:

If a scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to

determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702. The Third Circuit has established that Rule 702, as interpreted by *Daubert*, 509 U.S. 579 (1993), and its progeny includes "three distinct substantive restrictions on the admission of expert testimony: qualifications, reliability and fit." *United States v. Mathis*, 264 F.3d 321, 335 (3d Cir. 2001); *Elcock v. Kmart Corp.*, 233 F.3d 734, 741 (3d Cir. 2000). The proponent of the expert testimony bears the burden of establishing the reliability and admissibility of the expert's testimony by a preponderance of the evidence. See *Daubert*, 509 U.S. at 593 n. 10; *In re TMI Litig.*, 193 F.3d 613, 663 (3d Cir. 1999). Rule 702 embodies a liberal policy of admissibility. *Pineda v. Ford Motor Co.*, 520 F.3d 237, 243 (3d Cir. 2008); *In re Paoli R.R. Yard PCB Litig.*, 916 F.2d 829, 857 (3d Cir. 1990).

First, the proffered witness must be a qualified expert, meaning that the witness must possess specialized expertise. *Feit v. Great-West Life & Annuity Ins. Co.*, 460 F. Supp. 2d 632, 636 (D.N.J. 2006). Courts have interpreted this requirement liberally, holding that a broad range of knowledge, skills, and training

qualify an expert. *In re TMI Litig.*, 193 F.3d at 664.

Second, the testimony must be reliable. This requirement has been interpreted to mean that an "expert's opinion must be based on the 'methods and procedures' rather than on 'subjective belief or unsupported speculation'; the expert must have 'good grounds' for his or her belief." *Id.* (citing *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d 717, 742 (3d Cir. 1994), *cert. denied*, 513 U.S. 1190 (1995)). The focus is not upon the expert's conclusions, but rather upon his methodology; the issue is whether the evidence should be excluded because the flaw is large enough that the expert lacks good grounds for his or her conclusion. *In re Paoli R.R. Yard PCB Litigation*, 35 F.3d at 746. Furthermore, an "expert's testimony must be accompanied by a sufficient factual foundation before it can be submitted to the jury." *Elcock v. Kmart Corp.*, 233 F.3d 734, 754 (3d Cir. 2000) (citing *Gumbs v. International Harvester, Inc.*, 718 F.2d 88, 93 (3d Cir. 1983)).

Under *Daubert*, the factors that a district court should take into account in evaluating whether a particular scientific methodology is reliable, so that expert testimony based on methodology is admissible, include:

- (1) whether a method consists of a testable hypothesis;
- (2) whether a method has been subject to peer review;
- (3) known or potential rate of error;
- (4) existence and maintenance of standards controlling

- technique's operation;
- (5) whether a method is generally accepted;
 - (6) relationship of technique to methods which have been established to be reliable;
 - (7) qualifications of expert witness testifying based on methodology; and
 - (8) non-judicial use to which method has been put; however, list is non-exclusive, and each factor need not be applied in every case.

F.R.E. 702; *Elcock v. Kmart Corp.*, 223 F.3d 734 (3d Cir. 2000). This list is "non-exclusive," and "each factor need not be applied in every case." *Elcock*, 233 F.3d at 746 (citing *Kumho Tire Co., Ltd. v. Carmichael*, 526 U.S. 137 (1999)).

Third, the expert's testimony must "fit," meaning that the testimony "'must be relevant for the purposes of the case and must assist the trier of fact.'" *Calhoun v. Yamaha Motor Corp., U.S.A.*, 350 F.3d 316, 321 (3d Cir. 2003) (quoting *Schneider v. Fried*, 320 F.3d 396, 405 (3d Cir. 2003)). The "ultimate touchstone" in evaluating admissibility under Rule 702, is "helpfulness to the trier of fact." *Id.* at 746. An expert who renders an opinion based on factual assumptions not present in the case "cannot be said to 'assist the trier of fact,' as rule 702 requires." *Elcock*, 233 F.3d at 756 n.13. Consequently, "[t]his type of an opinion misleads the fact-finder and arguably does not comply with the 'fit

requirement[.]” *Id*

When faced with a proffer of expert testimony, the Federal Rules of Evidence “assign to the trial judge the task of ensuring that an expert’s testimony both rests on a reliable foundation and is relevant to the task at hand.” *Daubert*, 509 U.S. at 597; see also Fed. R. Evid. 104(a). “By means of a so-called ‘*Daubert* hearing,’ the district court acts as a gatekeeper, preventing opinion testimony that does not meet the requirements of qualification, reliability and fit from reaching the jury.” *Schneider v. Fried*, 320 F.3d 396, 404 (3d Cir. 2003).

Here Defendants argue Dr. Ziejewski is unqualified to testify as an expert in specific causation of medical injuries. (Doc. 120 at 5.) While Defendant recognizes a biomechanic is qualified to offer testimony regarding the forces generated by certain accidents and the likely effects of such forces on the human body, Defendants contend many federal courts have held that a biomechanic is not qualified to offer an opinion on whether or not the accident at issue could have caused the Plaintiff’s injuries. (*Id.* at 6 (citing *Morgan v. Girgis*, 07 CV 1960, p.6 (S.D.N.Y. May 16, 2008) (citations omitted)).) Defendants argue Dr. Ziejewski himself was precluded and not allowed to give medical testimony in a case with respect to what happens mechanically to a person involved in a whiplash-type of accident as he had no medical training. *Standeford v. Winn Dixie*, 688 So.2d 602, 604-05 (La. App. 1996).

Defendants also argue Dr. Ziejewski's opinions are based upon unreliable methodology and lack sufficient factual foundation. (Doc. 120 at 8.) Defendants assert the results of Dr. Ziejewski's laboratory test are unreliable because they were based on an exemplar Ford Ranger rather than the vehicle that was actually involved in the crash, Dr. Ziejewski includes no specific analysis of the damage to the Plaintiff's vehicle, and the "fit" of the Plaintiff is based on photographs of the Plaintiff sitting in an exemplar Ford Ranger rather than the physical observation of the Plaintiff in the actual Ford Ranger. (*Id.* at 10-11.)

Defendants further argue Dr. Ziejewski's use of an Articulated Total Body computer simulation is unreliable because he gathered his inputs from crash scene photographs, exemplar vehicles and outright assumptions, that he gives no scientific support for his use of photographs to determine vital input such as delta V, angles of impact, or initial position, and that he does not provide the specific numbers for delta V, angles of impact, duration of impact or initial position. (*Id.* at 12.)

According to Defendants, a review of Dr. Ziejewski's expert report reveals very detailed explanations of the various methodologies that he used, but no explanation as to how he applied that methodology to the facts of the case to arrive at his conclusions. (Doc. 193 at 3.) "As such, he is essentially connecting his opinion to the data solely by his own assertions

that his conclusions are supported by the data.” (*Id.*) Defendants contend this is not allowed under *Daubert* and should be precluded. (*Id.*)

In opposition, Plaintiffs argue Dr. Ziejewski is a highly qualified expert in the field of biomechanics and courts in this circuit, as well as across the country, have held that a biomechanical expert may testify as to the forces exerted in an accident and as to whether or not those forces are sufficient to cause the types of injuries suffered in the accident. (Doc. 160 at 8 (*citing Dorsett v. American Izuzu Motors, Inc.*, 805 F. Supp. 1212 (E.D. Pa. 1992) (biomechanic qualified to testify as to what kind of injuries he would expect to see in the accident and that injuries were caused by the design and seatbelt involved); *Brown v. Old Castle Precast East*, 2003 WL 22999302 (E.D. Pa. 2003) (biomechanic allowed to testify that the forces involved were above the injury level criteria for causing mechanical injury to the brain; court noted that there is a distinction between mechanical and medical causation); *Yarchak v. Trek Bicycle Corp.*, 208 F. Supp. 2d 470 (D. N.J. 2002) (biomechanic qualified to testify as to the effect of a bicycle seat design on the male anatomy)).)

Plaintiffs further argue there is a nationwide consensus that a biomechanic may testify as to the mechanical causation of an injury. In support, Plaintiffs cite *Bowers v. Norfolk Southern Corp.*, 537 F. Supp. 2d 1343, 1377, 2007 WL 2187396, at* 32 (M.D.

Ga. 2007), where the court addressed this specific issue and found:

In the context of litigation, therefore, biomechanical engineers typically are found to be qualified to render an opinion as to the forces generated in particular accident and the general types of injuries those forces may generate. *Smelser v. Norfolk S. Ry. Co.*, 105 F.3d 299, 305 (6th Cir. 1997); *Combs v. Norfolk & W. Ry. Co.*, 256 Va. 490 at 497, 507 S.E.2d 355, 359 (1998); *Yarchak v. Trek Bicycle Corp.*, 208 F. Supp. 2d 470, 501 (D.N.J. 2002) (permitting biomechanical engineer to testify generally about types of injuries that may be caused by a bicycle seat). However, biomechanical engineers ordinarily are not permitted to give opinions about the "precise cause of a specific injury." *Smelser*, 105 F.3d at 305; see also *Yarchak*, 208 F. Supp. 2d at 501 (admitting the general causation testimony of a biomechanical engineer and noting that the engineer did "not offer any clinical or medical opinions with respect to the specific medical cause or source of Plaintiff's [injuries]"). This is because biomechanical engineers lack the medical training necessary to identify the different tolerance levels and preexisting medical conditions of individuals, both of which "could have an effect on what injuries resulted from an accident." *Smelser*, 105 F.3d at 305.

Id.

Plaintiffs also contend that Dr. Ziejewski's opinions are supported by proper methodology as required by *Daubert*. (Doc. 160 at 10.) Plaintiffs contend Dr. Ziejewski obtained an exemplar vehicle of the same year, make and model as Plaintiff's, measured the vehicle, performed laboratory compression testing, performed vehicle dynamic analysis and used photogrammetry to evaluate the damage to Plaintiff's vehicle. (*Id.* at 15.) Plaintiffs argue that Defendants do not explain why they contend Dr. Ziejewski's findings

are unreliable because he used an exemplar vehicle and not Plaintiff's vehicle itself in the measurements. Plaintiffs contend that Defendants failed to show how the use of an undamaged vehicle, as opposed to Plaintiff's smashed vehicle, would result in a different analysis. (Doc. 160 at 13). Likewise, Plaintiffs contend Defendants do not identify why Dr. Ziejewski's use of a normal driving position or photographs of Plaintiff in the vehicle are unreliable. (*Id.*) Plaintiffs note that despite Defendants' contentions for the need to account for Plaintiff's individual driving position or any response to the specific situation that would have placed Plaintiff in an atypical driving position, there is no indication that Plaintiff was in anything other than a normal position. Finally, Plaintiffs respond to Defendants' criticism that Dr. Ziejewski's report does not set out the specific delta V in this case and argue that Dr. Ziejewski's analysis found that the force exerted by Plaintiff's head striking the window was well in excess of the minimum force necessary, and Dr. Ziejewski, throughout his analysis, used the most conservative estimates and even underestimated the potential force of impact.

Having considered the arguments from the parties' briefs, as well as the testimony and arguments heard during the *Daubert* hearing, the Court denies Defendants' request to preclude Dr. Ziejewski's testimony. The Court finds Plaintiffs have met their burden in demonstrating Dr. Ziejewski's qualifications, and the

reliability and fit of his testimony. See *Daubert*, 509 U.S. at 593 n.10; *Mathis*, 264 F.3d at 335.

First, the Court finds Dr. Ziejewski is well qualified as a biomechanical expert. Dr. Ziejewski is a professor of mechanical engineering at North Dakota State University, an adjunct professor of neuroscience at the University of North Dakota School of Medicine, and director of the Impact Biomechanical Laboratory and the Automotive Systems Laboratory at North Dakota State University's College of Engineering. He has specialized knowledge, skill and training in the field of biomechanics and has continually been recognized as a biomechanic expert in many courts throughout the country for the past twenty-five years.

Importantly, Defendants do not dispute Dr. Ziejewski's skill and knowledge in the field of biomechanics. Rather, Defendants argue Dr. Ziejewski's opinion that the forces Plaintiff sustained in the subject collision were sufficient to cause a brain injury and a cervical region injury amount to a medical opinion, and should therefore be precluded because this goes beyond his expertise as a biomechanic. (Doc. 120 at 6.) Plaintiffs disagree and assert that Dr. Ziejewski's opinion as to the potential injuries that could be sustained in the subject accident is a biomechanical determination based on established biomechanical parameters, not a medical opinion. In fact, during the hearing, Dr. Ziejewski repeatedly acknowledged that he was not a medical

doctor and that he would not attempt to testify as such. Specifically, Dr. Ziejewski noted he would not testify as to the extent of injuries allegedly suffered by Plaintiff from the accident, but would testify that the forces sustained by Plaintiff in the collision were sufficient to cause his injuries.

The Court finds Dr. Ziejewski's purported testimony falls within his expertise and therefore that he is qualified to testify in this case. In conducting his analysis, Dr. Ziejewski stayed within this area of expertise and relied on biomechanical parameters in forming his opinions. As a biomechanical engineer, Dr. Ziejewski "is qualified to render an opinion in this case as to general causation, but not as to specific causation." *Bowers*, 537 F. Supp. 2d at 1377. This means that Dr. Ziejewski may not testify as to the extent of injuries suffered by Plaintiff, which would require the identification and diagnosis of a medical condition, but may testify that the force sustained by Plaintiff in the subject accident could potentially cause certain injuries as this amounts to a biomechanical determination. *Id.*

The Court also finds Dr. Ziejewski meets the reliability requirement of the *Daubert* analysis. The Court finds Dr. Ziejewski's opinions were based on "methods and procedures" rather than subjective belief or unsupported speculation and that he had "good grounds" for his beliefs. See *In re Paoli Railroad Yard PCB Litigation*, 35 F.3d 717, 742 (3d Cir. 1994), cert. denied, 513 U.S.

1190 (1995)). Based on Dr. Ziejewski's testimony at the hearing, the Court finds Dr. Ziejewski's methodology falls in line with the facts that a district court should take into account in evaluating whether a particular scientific methodology is reliable under Daubert. In particular, the Court finds Dr. Ziejewski's methodology consisted of testable hypothesis, was subjected to peer review, had a known or potential rate of error, was generally accepted, and the techniques were sufficiently established to be reliable. Dr. Ziejewski sufficiently explained and justified his use of an exemplar 2000 Ford Ranger and how he developed the inputs to be used in his analysis.

As the Court noted during the hearing, many of Defendants' arguments and criticisms of Dr. Ziejewski's methodology and inputs used went more to the weight of the evidence, rather than to his ability to testify as an expert in this case. Mere weakness in the factual basis of an opinion bears on the weight of the evidence, not its admissibility. *McLean v. 988011 Ontario, Ltd.*, 224 F.3d 797, 801 (6th Cir. 2000). Those arguments are more appropriate for the jury. At this point, recognizing that Dr. Ziejewski's methodology was found to be sufficiently reliable to be admitted at trial does not mean that it should be taken as truth. At trial, Defendants will have the opportunity to demonstrate why Dr. Ziejewski's conclusions should not be credited or given substantial weight. However, at this stage the Court is satisfied that

Plaintiffs have sufficiently met their burden in establishing the reliability of this testimony.

Finally, the Court finds Dr. Ziejewski's testimony "fits" this case because it is "relevant for the purposes of this case" and will "assist the trier of fact." See *Calhoun*, 350 F.3d at 321. Here the parties do not dispute that Defendants' tractor trailer rear-ended Plaintiff's pick-up truck. Rather, the parties dispute why and how the accident happened, the speed at impact, and whether and to what extent Plaintiff was injured. Certainly evidence regarding the force of the impact and a scientific assessment of the damage and injuries which could result under such force is relevant to the issues of this case. Dr. Ziejewski's analysis certainly would assist the jury in deciding what happened here and whether the injuries Plaintiff allegedly sustained are consistent with the impact of the crash. Thus, the Court finds Dr. Ziejewski's testimony sufficiently "fits" this case and will deny Defendants' motion to preclude Dr. Ziejewski's testimony at trial.

III. CONCLUSION

For the reasons discussed above, Defendants' Motion in Limine to Preclude the Testimony of Dr. Ziejewski (Doc. 119) is denied. An appropriate Order follows.

Dated: 5/21/09

S/Richard P. Conaboy
Richard P. Conaboy
United States District Judge

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ORDER

AND NOW, this 20th day of May 2009, for the reasons discussed in the accompanying Memorandum, "Defendants' Motion in Limine, or Alternatively, Request for a *Daubert* Hearing to Preclude the Testimony of Mariusz Ziejewski" (Doc. 119) is DENIED.

S/Richard P. Conaboy
Richard P. Conaboy
United States District Judge